

578.-10.

SEP 16 1917

Am. C.

BONANZA CEMENT TILE ROOFING



AMERICAN CEMENT TILE
MANUFACTURING COMPANY

BONANZA
CEMENT TILE
ROOFING

AMERICAN CEMENT TILE
MANUFACTURING COMPANY

FRANKLIN
INSTITUTE
LIBRARY

FRANKLIN
INSTITUTE
LIBRARY

BONANZA CEMENT TILE ROOFING

REINFORCED WEAR-PROOF AND FIRE-PROOF

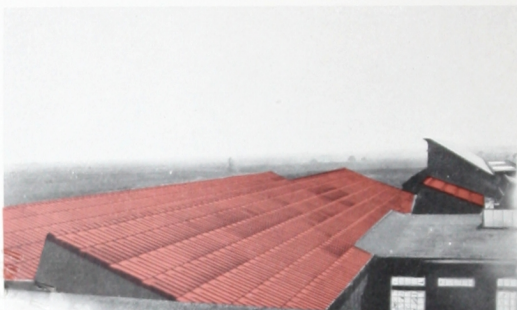
CEMENT TILE FOR
PITCHED AND FLAT
ROOFS AS APPLIED TO
INDUSTRIAL BUILDINGS



AMERICAN CEMENT TILE
MANUFACTURING COMPANY

General Offices:
OLIVER BLDG., PITTSBURGH, PA.

BRANCH OFFICES: NEW YORK PHILADELPHIA CLEVELAND ST. LOUIS
WORKS: WAMPUM, PA. LINCOLN, N. J. FAIRFIELD, ALA.



Hitchings & Co.
Elizabeth, N. J.

Machine Shop and
Garage, 10,000
square feet. Installed
1912-1913. This shows
the pleasing appearance
of "Bonanza."

Owens Bottle
Machine Co.
Toledo, O.

Factory, 66,000 sq.
ft. Installed April,
1912. This picture
shows the superior saw
tooth ridge covering
and finish into parapet
gable walls built on a
skew. Also special
cement tile coping
with red finish fur-
nished for gable walls.
Addition, June, 1914.



Georgia Power Co.
Tallulah Falls, Ga.

Showing unusual difficulties in erec-
tion, material being lowered down
incline. High-tension Hydro Electric
Power Buildings. This shows the value
of "Bonanza" protecting electrical
machinery approximating hundreds of
thousands of dollars in value.

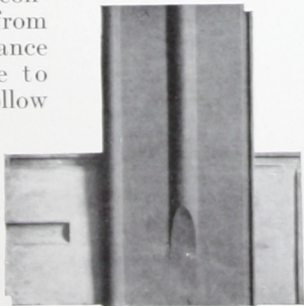
Bonanza Cement Tile Roofing

BRIEFLY stated, a large reinforced cement tile with a red outer surface as shown and illustrated, laid directly on steel channel purlins, spaced approximately four feet apart, requiring no sheathing or further waterproof covering, light in construction (less than 14 pounds per square foot, the equivalent of slate on two-inch sheathing), readily applied, pleasing in appearance, fireproof and waterproof and, all in all, a roof of quality and with the backing of reputable manufacturers.

"Bonanza" Interlocking and Overlapping Reinforced Cement Tile for pitched roofs and the 1½-inch Flat Tile for flat roofs, are the outcome of an experience with cement tile dating back approximately 20 years. Being the pioneer product in its particular field and having been on the market for more than ten years "Bonanza" is recognized today as standard among Engineers, Architects and Mill Owners, and "Bonanza" reputation backs its products with an ample guarantee.

This booklet shows types of construction for various lines and purposes, as found amongst the many thousands of installations, and suggests to the user its many possibilities. No aim has been made here to give details, a valuable booklet being available at request, showing actual steel design and "Bonanza" application.

There is little doubt that the roofing problem is the most important in the design of a mill building, as it is the roof which protects contents and employees, aside from a consideration of maintenance efficiency and resistance to fires. The pages which follow at the end of the book, give a general description and information, and if the book serves its purpose, a trial will prove "Bonanza" reputation and perfection.





Pittsburgh Crucible Steel Co., Midland, Pa.

Shipping Room, Mill and Furnace Bldg., comprising Merchant Mill Dept., with a total length of over 1,000 ft., and approximately 170,000 sq. ft. of roof area. Installed 1914.



Pittsburgh Crucible Steel Co., Midland, Pa.

Foundry, Machine Shop, Carpenter Shop and Store House.
Part of a total installation of approximately 600,000 square feet of "Bonanza" Roofing.
Installed 1914.



J. H. Scott & Co., Detroit, Architects
Detroit & Windsor Dancing Pavilion, Bois Blanc Island, Ontario
50,000 square feet.

This is one of the largest and finest dance floors in North America.

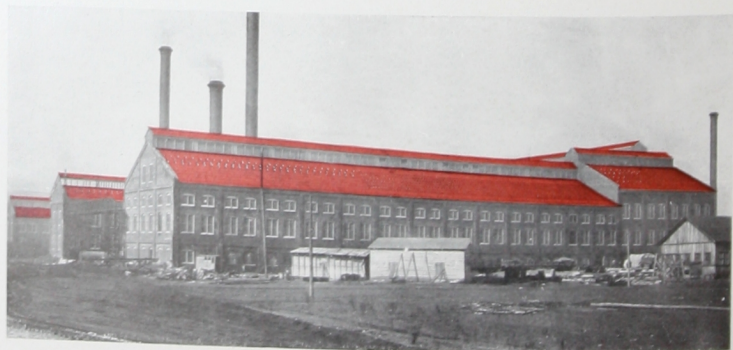


Interior View of Detroit & Windsor Dancing Pavilion



Bethlehem Steel Co., So. Bethlehem, Pa.

Showing Pit Furnace Bldg., Open Hearth, Converter and Electric Furnace Casting, a total length of approximately 1000 feet. In addition to the By-products Plant covered with "Bonanza," a total of 15 buildings since 1909 to June, 1914, with a roof area of over 300,000 square feet have been covered.



Tennessee Coal, Iron & R. R. Co., Ensley, Ala.

Entire Coke By-products Plant covered with some 150,000 square feet of "Bonanza."



Hooper-Falkenau Engr. Co., New York, Engineers

H. Wales Lines Co., Meriden, Conn., Contractors

Crane Valve Co., Bridgeport, Conn.

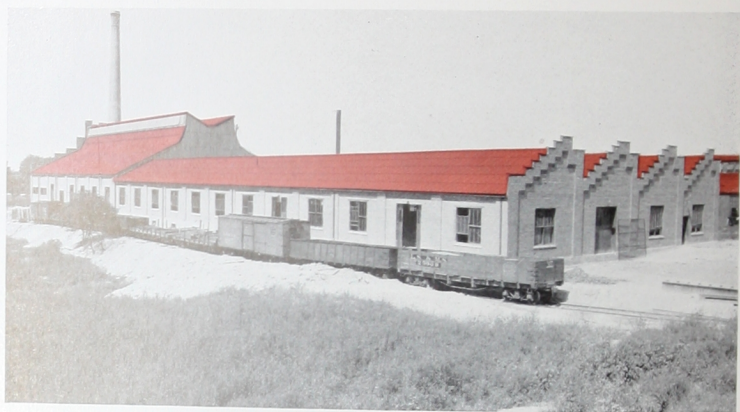
100,000 square feet from September, 1911 to October, 1913.

The machine shop was re-covered in one month during the winter, the slag roof having been removed and tile laid without any interruption. This installation is one where re-orders have been frequent and large.



P. C. C. & St. L. R. R., Indianapolis, Ind.

Outbound Freight House and Office. 52,000 square feet. Installed May, 1913.
Note hip roof construction on the office.



Devore-McGormley Co., Toledo, Engineers

Toledo Glass Co., Toledo, Ohio

37,500 square feet. Installed August, 1912. This entire roofing contract including roof, sheet metal work, composition covering in gutters and siding handled by the "Bonanza" organization.



Toledo Glass Co., Toledo, Ohio

Interior Furnace Building.

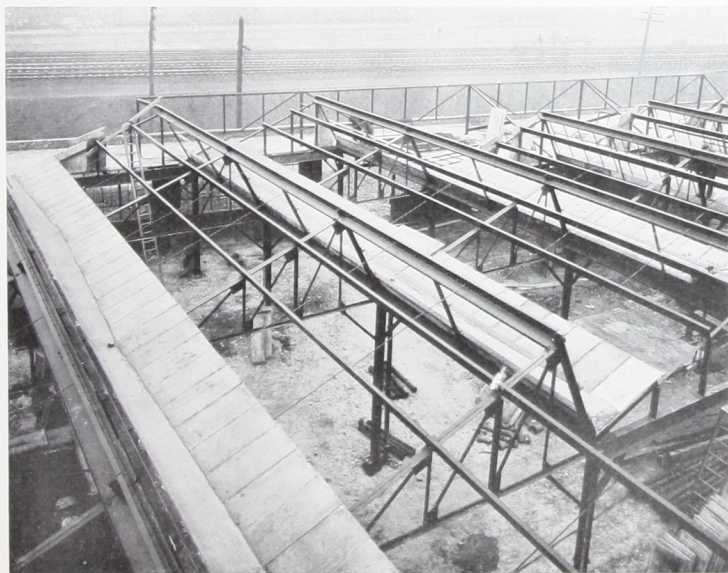
Showing "Pond" Truss construction with the flat "Bonanza" gutter construction and "Bonanza" interlocking tile above.



Walter Kidde, New York, Engineers and Contractors

Barlow Foundry Co., Newark, N. J.

Entire Plant. 35,000 square feet. Installed October, 1913. Note finish at ridge and gable ends of saw tooth sections.



Barlow Foundry Co., Newark, N. J.

See formation of gutter saddles for slope. All ready for waterproof covering, after which the interlocking tile are placed above.



Ruggles-Coles Engineering Co., New York, Engineers

Nicola Bldg. Co., Contractors

Crescent Portland Cement Co., Wampum, Pa.

200,000 square feet of roofing covering entire plant. The original contract was erected in 1908, with repeat orders every year since.



Crescent Portland Cement Co.

This view gives a good idea of the method of laying tile on channel purlins.
Note overlap of four inches and break in joints.



McClintic-Marshall Co., Engineers and General Contractors

Union Switch & Signal Co., Swissvale, Pa.

Showing Foundry, Machine and Forge Shops. An area of 120,000 square feet.
Erected 1907.



Ernest McGeorge, Cleveland, Engineer

McClintic-Marshall Co., Contractors

Parish & Bingham Co., Cleveland, Ohio

Showing interior view of building, 100 x 900, covered with 1½-inch flat tile



Devore-McGormley Co., Toledo, Engineers

The Toledo-Owens Glass Sand Co., Silica, Ohio

Entire Plant. 37,000 square feet. Installed June, 1913. This is the fourth complete plant covered with "Bonanza" for the same interests.



Didier-March Co., New York City, Engineers and Contractors

Bethlehem Steel Co., So. Bethlehem, Pa.

Coke By-products Plant.

60,000 square feet. Installed October, 1912.



Jas. B. Baker, New York, Architect. R. T. & C. D. Stewart Contracting Co., Easton, General Contractors

Lafayette College, Easton, Pa.

Mechanical Laboratory. Installed April, 1912.



Lafayette College, Easton, Pa.

Interior View. Showing the lighting effect from our glass insert tile, each glass tile being 14 x 24 inches, of $\frac{3}{4}$ -inch wire ribbed glass.



Baldwin Locomotive Works, Eddystone, Pa.

Forge and Blacksmith Shop. Installed 1910. This is a typical construction with a very wide concrete gutter pitched to the ends.



Baldwin Locomotive Works, Eddystone, Pa.

Erecting Shop. Installed 1911.



Detroit Steel Products Company, Detroit, Mich.

100,000 square feet.

First installation May, 1908, with repeat orders in 1908-09-10-11



Belmont Iron Works, Eddystone, Pa.

18,000 square feet. Installed October, 1912.

Panama Canal

The Engineering Wonder of the Age

WITH the completion of the Panama Canal, connecting the two great oceans in this hemisphere, we see accomplished one of the greatest engineering feats of all times. In design and construction, the United States army engineers employed the most modern and approved materials and engineering skill. While first cost was always a consideration, permanency and low maintenance costs were uppermost in their mind.

At Balboa, the terminal on the Pacific of both the canal and Panama Railroad, owned by the United States Government, it was found necessary to erect large shops and piers to provide for their repairs and upkeep. The Panama Railroad is an overland carrier, approximately 50 miles in length, connecting the port of Colon on the Atlantic with Balboa on the Pacific. The size and enormity of these buildings are noted in the enclosed views. They will not only operate for the Government, handling the largest battleships, but will also engage in a general commercial business with private steamship companies in the repairs of their steamers.

The most important question under consideration with the Isthmian Canal Commission in designing these shops, was the vexatious roof problem, and it was finally decided that no material so nearly met the requirements as a cement tile.

After the regular procedure of advertising for bids, a contract was formulated and entered into between the United States Government and this Company in October, 1912.

Acting upon our suggestion, the Commission decided to have all the tile manufactured on the Isthmus, and a plant was established by our Company at Paraizo, Canal Zone. In February, 1913, experienced men from our factories in the States, began the manufacture of over one million square feet of roofing; additional labor, comprised mostly of Jamaican and Barbadian negroes, being obtained on the Isthmus. After completion, the material manufactured was stored in the yards at Paraizo, and subsequently transferred in special railroad cars provided by the Panama Railroad Co. to Balboa, some six miles distant.

The erection of these roofs was begun in June, 1913, by our own regular efficient crews, and the 750,000 square feet shown in the bird's-eye view were all completed in January, 1914. In the upper right-hand corner are shown the concrete foundation settings for the large covered piers 160x1000 feet in size. These piers, with a few of the other buildings constructed since the picture was made, will take up the balance of the 250,000 square feet of "Bonanza."

There will be approximately 30 buildings under cover, varying in size from the largest, the piers mentioned above, to the small sanitary buildings. The longest building illustrated, the lumber and equipment shed on the right, is over 600 feet long, while the widest, the machine shop on the extreme left, is over 200 feet wide. These figures give some idea of the immensity of the project. The only buildings to be entirely enclosed are the general store house in the center of the picture and the office building now under construction. All other buildings will be entirely open to allow for free ventilation. The roofs have large overhangs at all points, and these are of sufficient size to prevent the rain from beating into the buildings. Practically all of the lighting of the buildings is obtained by the use of over 14,000 of "Bonanza" wire glass insert tile, well distributed in the roof.

The most vital points in considering a suitable roof for these buildings were permanency, maintenance, cost, waterproof and fireproof features, and last but not least, as cool an interior as possible. Needless to say, the sun's rays are extremely hot, but these are readily diverted so that the shops are at all times most comfortable. There are few places where the rainfall is as heavy as on the Canal Zone, the heaviest fall of 5.86 inches in one hour having been recorded by the Government instruments at this very point, on June 2, 1906.

The weight of this vast amount of roofing is almost 8000 tons. In its manufacture the best Portland Cement and Silica Sand, obtained by the Government at Point Chamay, Panama, were used. Specifications called for guarantee of 150 pounds per square foot, evenly distributed load, with the tile under four-foot support. First test made on three week's old tile showed over 250 pounds, so that no further tests were made. The entire manufacture and erection, under the supervision of duly appointed inspectors, at all times met with the hearty approval of the Commission.



American Cement Tile Mfg. Co., Lincoln, N. J. Plant

From this plant we handle the entire East. Only 25 miles from our offices at 29 Broadway, New York City.



Didier-March Co., Keasbey, N. J.

90,000 square feet. Entire clay products plant covered.



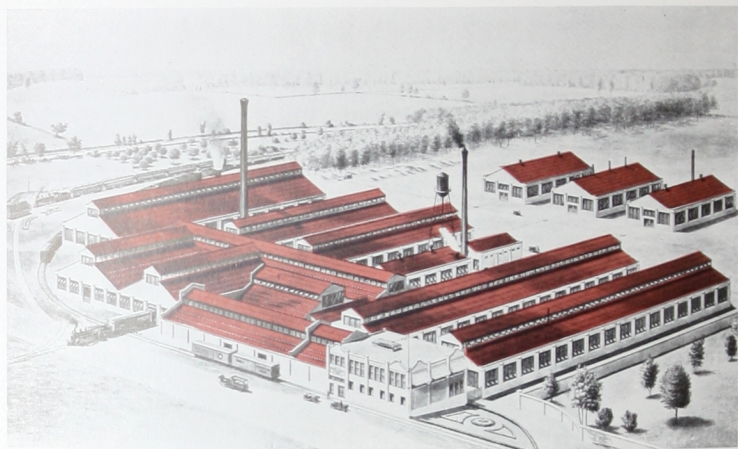
City of New York Catskill Water Supply

Typical of 47 buildings, showing special design of tile roof now under contract; the largest roofing order of the kind ever placed.



Barlow Foundry Co.

Showing flat roof tile and flat tile gutters ready for composition covering.
The large plates cover the saw tooth gable ends.



Hooper-Falkenau Co., Engineers
Nelson Valve Co., Philadelphia
 Entire Plant.
 100,000 square feet. Installed 1909-1910.



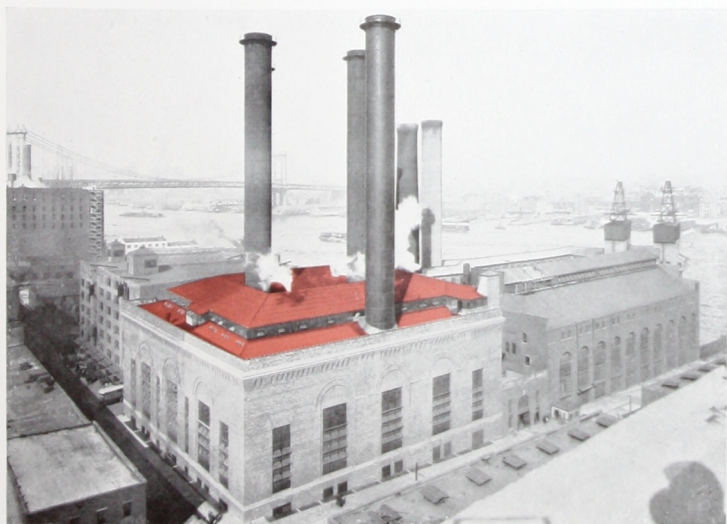
Nelson Valve Co.

This is typical of all buildings showing splendid construction.
 All walls are concrete, steel sash throughout.



Somerville Iron Works, Somerville, N. J.

80,000 square feet. Entire Foundry Plant covered. Original order placed September, 1909, with three repeat orders in 1912.



Edison Electric Illuminating Co., Brooklyn, N. Y.

This further demonstrates the great trust placed upon "Bonanza" roofs as used on a modern metropolitan electric power plant



Plant of Syracuse Crucible Steel Co., Syracuse, N. Y.

Covered in its entirety with interlocking tile on pitched roofs and flat $1\frac{1}{2}$ -inch tile on flat roofs, a total of over 500,000 sq. ft.



Tracy, Swartwout & Litchfield, New York, Architects. Hedden Cons. Co., New York, General Contractors

Walden Knife Co., Walden, N. Y.

Entire Plant of 25,000 square feet. Installed October, 1915. In these buildings are manufactured fine cutlery, so that a perfect roof is most essential.



Standard Oil Co., Newark, N. J.

Garage. Installed 1912.



Anheuser-Busch Brewing Co., St. Louis, Mo.

Loading Platform.

Covered in 1906. Also covered new warehouse in 1913.



Favrot Livaudais, Architect. Geo. J. Glover, General Contractor, New Orleans

Pennick & Ford Can Co., New Orleans, La.

15,000 square feet. Installed May, 1912. Monitors finished by our plates.
Note finish on gable walls.



Lackawanna Bridge Co., General Contractors

Union Carbide Co., Welland, Ontario

Four buildings covered with "Bonanza" interlocking tile shipped from our Wampum, Pa., Plant. Duty figured in cost to customers. 52,000 square feet.
Installed Winter of 1913-1914.

Markings Used *Chen 500* (Measured In.)

Columbia University
in the City of New York

CIVIL ENGINEERING DEPARTMENT
TESTING LABORATORY

Date *Oct 25th 1912*

Made for *American Cement Tile Mfg Co.*

Tested by *Harold Perrine*

of Brooklyn

REPORT OF TRANSVERSE TESTS

New York City

Material Tested	Laboratory Test Number	Mark on Test Piece	Diameter or Width, ins.	Thickness or Height, ins.	Distance between Supports, ins.	Total Deflection, ins.	Maximum Load, lbs.	Modulus of Rupture, lbs. per sq. in.	Average	Remarks
<i>"Bonaire" Cement</i>	<i>176-51</i>	<i>51</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-52</i>	<i>52</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-53</i>	<i>53</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-54</i>	<i>54</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-55</i>	<i>55</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-56</i>	<i>56</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-57</i>	<i>57</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-58</i>	<i>58</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-59</i>	<i>59</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-60</i>	<i>60</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-61</i>	<i>61</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-62</i>	<i>62</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-63</i>	<i>63</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-64</i>	<i>64</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-65</i>	<i>65</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-66</i>	<i>66</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-67</i>	<i>67</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-68</i>	<i>68</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-69</i>	<i>69</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-70</i>	<i>70</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-71</i>	<i>71</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-72</i>	<i>72</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-73</i>	<i>73</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-74</i>	<i>74</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-75</i>	<i>75</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-76</i>	<i>76</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-77</i>	<i>77</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-78</i>	<i>78</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-79</i>	<i>79</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-80</i>	<i>80</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-81</i>	<i>81</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-82</i>	<i>82</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-83</i>	<i>83</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-84</i>	<i>84</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-85</i>	<i>85</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-86</i>	<i>86</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-87</i>	<i>87</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-88</i>	<i>88</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-89</i>	<i>89</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-90</i>	<i>90</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-91</i>	<i>91</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-92</i>	<i>92</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-93</i>	<i>93</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-94</i>	<i>94</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-95</i>	<i>95</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-96</i>	<i>96</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-97</i>	<i>97</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-98</i>	<i>98</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-99</i>	<i>99</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>
<i>tile 2' long</i>	<i>176-100</i>	<i>100</i>	<i>12 in.</i>	<i>4 in.</i>	<i>48</i>	<i>0.40</i>	<i>2,300</i>	<i>285</i>		<i>tile cracked</i>

REMARKS—Slide Rule used for all computations.

Modulus of Rupture = $\frac{W}{L^2} \times 100$

Notes:
W = weight in pounds.
L = distance between supports in inches.
L = width in inches.
L = thickness in inches.

Columbia University Test Facsimile



Test of Standard Interlocking Tile on a Four-foot Support

Showing an evenly distributed load of 2,300 pounds without fracture to tile.

With a total area of eight square feet, the test shows
a per square foot load of 285 pounds.

Description

BONANZA" tile are made 26 inches wide, 52 inches long and $\frac{7}{8}$ inch thick with a roll along one edge and a rabbet on the opposite edge. When placed on the roof, the roll interlocks with the rabbet on the next tile, and with the addition of elastic rubber cement, forms watertight joints. The cross joints are formed by lapping and staggering each row of tile over the next lower row about four inches, these joints also being pointed with the elastic cement. The tile are held in place by means of an offset at the top, extending the full width of the tile. From the illustrations can be seen the pleasing brick-red color of the tile, while the underside has a smooth white finish, obtained by our own patent process. Provision is made for a one-point ventilation at each side roll to eliminate the possibility of ordinary condensation conditions. The cut on page 5 shows the front and back view of the standard tile.

Interlocking Tile—Dimensions and Weights

Size of tile	26x52 inches
Thickness of tile	$\frac{7}{8}$ inch
Surface exposed to weather	24x48 inches
Number of tiles per square of roof (100 sq. ft.)	12 $\frac{1}{2}$
Weight of single tile	110 pounds
Weight per square of roof	1375 "
Weight per square foot	13 $\frac{3}{4}$ "

Flat Roof Tile

Where the roof construction is less than one fifth pitch (ratio between rise and span), we offer our 1 $\frac{1}{2}$ inch flat slab which spans a purlin spacing of five feet. The ends are laid directly on flange of I-beam purlins, after which the joints are pointed and the entire roof covered with some form of composition roofing. This construction is best seen on pages 25 and 28. Weighing but seventeen (17) pounds to the square foot, the steel design is reduced to a minimum, as compared with the solid slab construction. This tile, being made and seasoned in our factories, can be laid under any weather conditions with no possible danger of freezing.



Composition

"Bonanza" tile embody in their manufacture clean, sharp Lake or Sound sand and best Portland cement, which, combined under our secret process, form a thoroughly hard and dense mass, impervious to water and elements, making a roof that is today protecting millions of dollars worth of costly machinery and materials.

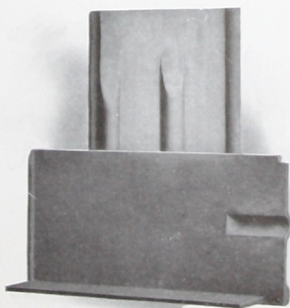
Roof Structure

There being no wood sheathing, nailing strip or fastening of any kind required, "Bonanza" construction is simplicity itself, only a steel superstructure being required, properly designed to carry a total roof load of from 45 to 50 pounds per square foot, with channel purlins in the pitched roofs and I-beams in the flat roofs. The interlock and overlap of tile obviates any fastening, forming a single unit and provides an expansion joint in every side and cross joint. Our Engineer's Data Sheet Book should be referred to for details of steel construction.

Strength and Fire Resistance

From report made by the testing Laboratory of the Columbia University, on page 31, and the crude test as shown by the loading of a slab with cement bags, a good idea may be obtained of the remarkable carrying capacity of a "Bonanza" tile. The average breaking down load, shown by the Columbia University, was approximately 350 pounds per square foot. The tile are thoroughly reinforced with metal which has approximately one-quarter inch covering on the under side to prevent corrosion.

From actual experience it has been proven that "Bonanza" Roofing will resist fire and remain intact as long as the superstructure is there to carry it. From actual fire tests made by the Brooklyn Polytechnic Institute, with the temperature at 1700 degrees F., in the course of one hour and five minutes tile showed no sign of disintegration, this test having been made for the Bureau of Buildings of the City of New York, as per facsimile letter on page 39.



"Bonanza" Sky-Light Tile

Reference to the double page in this book and other illustrations will show our "Bonanza" Sky-Light tile, which consists of our standard interlocking tile with an insert of $\frac{1}{4}$ -inch ribbed wire glass, size 14 x 24 inches. These eliminate expensive metal flashing in the ordinary form of sky-light, and can be placed anywhere in the roof, thus giving a perfect light distribution.

Gutters and Wall Plates

"Bonanza" construction is admirably adapted for saw tooth style of roofs, and page 11 shows clearly the use of our flat tile gutter with the gutter saddles ready for waterproof covering. Our saw tooth ridge is shown on page 34.

Where lightness in construction is required, we make wall plates to suit conditions such as shown on monitor and saw tooth ends, also between and above windows. Our standard flashing tile below monitor windows is shown on page 40. The finish on gable ends of building is made by the use of our end finishing tile shown on page 33, which has a downward extension eight inches deep.

Ventilator Collar Tile and Specials

We manufacture a special tile for carrying ventilators or for pipe openings, this being formed by a properly constructed collar on two adjacent tile, details to be had on application.

"Bonanza" Reasons

Simplicity in steel superstructure.

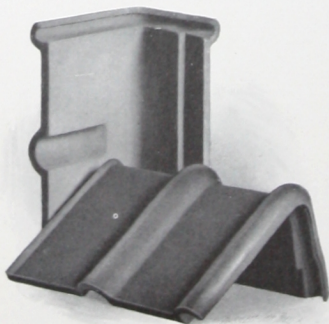
Fireproof, water and weatherproof.

Total absence of expensive yearly maintenance costs.

Reduction or entire elimination of insurance.

Pleasing architectural appearance.

Everlasting under ordinary mill conditions.



"Optimistics"—Not Prejudiced

"They have now been in service about eight years and show no signs of deterioration."

"Can only say that we were so well pleased with the first roof we bought from you, that we got another one last year and intend to adopt this as standard."

"Your tile roofing has been on our car barn for the past seven years and has given entire satisfaction."

"The fact that we first installed the roof on the boiler house, and later bought the same roof for our new storeroom, is sufficient proof that the material is doing the work."

"In the four years that this roof has been in service, we have not had any trouble at any time with it."

"The roof shows no sign of deterioration, and we are now pretty well satisfied that it should give entire satisfaction, and require practically no upkeep cost for a very long time."

"Were I to put up another cement building I would certainly specify your goods."

"We consider it the most satisfactory roof of any with which we have had experience."

"Appear to the writer that they would be a good roof for any building requiring a roof of light nature."

"Your 'Bonanza' Cement Tile Roofs are giving us very good satisfaction, and we are well pleased with them."

"Giving excellent satisfaction. We have had no trouble whatever with it."

"The 'Bonanza' Tile Roof which you placed on our machine shop, has been in service more than three years, and is proving extremely satisfactory and in every particular up to your guarantee."

"About five years ago we built a new fire-proof boiler house on which we used your 'Bonanza' Cement Tile Roofing and it has given us entire satisfaction, and we feel is the best roofing we could have used on this building."

"If we were building any further additions we would adopt this roof."

"Have given us satisfaction in every respect. The roofs are water-tight throughout and did not need maintenance."

"The Cement Tile Roofs which you erected for us are giving very good satisfaction."

"The roof you erected on our Cooling Tower Motor House is still giving complete satisfaction."

"It is very satisfactory in every respect, and has not given us one moment's trouble since it was put on."

"We can find no flaws in your roofing. It is satisfactory."

"We would not use any other grade of roofing on our permanent buildings. We figure that on any building constructed for fifty years life, or even less, that your tile is far the cheapest and most efficient."

"This roof has been in service for the past eight years, giving entire satisfaction. Roof shows no deterioration and maintenance charges have been nothing up to the present time."

"It has given entire satisfaction and is in excellent condition. We regard it as very desirable because of its fire-proof qualities and the fact that it is not subject to corrosion."

"This roofing has given us no trouble whatever and we find it very satisfactory in every way, saving us a large amount of insurance, as by using this type of roofing it makes our buildings entirely fire-proof."

"The 'Bonanza' Tile Roofing which we installed on our power plant when we built it about seven years ago, has given first-class satisfaction, and is all that we could desire in the way of a first-class fire-proof roof."

"Your cement tile roof has given us entire satisfaction since it was installed eight years ago. When we are ready to make an addition to our present Forge Room we will want to use your Bonanza Roof."

Those Who Know

Imagine the map of North America and realize that from the Arctic Ocean to the Gulf of Mexico and from the Atlantic Ocean to the Pacific the continent is dotted with "Bonanza" roofs. All weather and industrial conditions are alike and of indifference to "Bonanza." Unfortunately, space permits only a partial listing of "Bonanza" installations.

Alabama

Birmingham
Alabama Power Co.
Birmingham Railway Light
& Power Co.
Pratt Consolidated Coal Co.
U. S. Cast Iron Pipe & Foundry
Co.
Fairfield
Tenn. Coal, Iron & R. R. Co.
Magella
Alabama Power Co.
Montgomery
Tillis, Richard
Western Railway of Alabama

Connecticut

Bridgeport
Connecticut Breweries
Crane Valve Co.
Salts Textile Mfg. Co.
Fairfield
Fairfield Rubber Co.
Georgetown
Gilbert & Bennett Mfg. Co.
Hartford
Gray Telephone Pay Sta. Co.
Whitlock Coil Pipe Co.
Milddale
Clark Bros. Bolt Co.
Plantsville
Blakesley Forging Co.

Delaware

Wilmington
Harlan & Hollingsworth
Pusey & Jones Co.

Florida

Bagdad
Bagdad Land & Lumber Co.

Georgia

Atlanta
Destructor Co.
Savannah
Destructor Co.
Tallulah Falls
Georgia Railway & Power Co.

Illinois

Buckner
United Coal Mining Co.
Chicago
A. Jora Jr. Co.
Mrs. Junction Railway Co.
Metropolitan West Side Ele-
vated Ry. Co.
Peoples Gas Light & Coke Co.

East St. Louis

General Chemical Co.
Missouri Malleable Iron Co.

Granite City

American Steel Foundries

Joliet

Illinois Steel Co.

Moline

Republic Iron & Steel Co.

Indiana

Beech Grove
St. Francis Hospital
Buffington
Universal Portland
Cement Co.
Gary
Indiana Steel Co.
Hagerstown
Tide Water Pipe Co.
Indianapolis
Link-Belt Co.
Penna. Lines W. of Pittsburgh

Kokomo

Pittsburgh Plate Glass Co.

Lafayette

Ross Gear & Tool Co.

Kentucky

Shelby
Consolidation Coal Co.

Louisiana

New Orleans
Pennick & Ford Can. Co.

Maine

Portland
Portland Gas Light Co.

Maryland

Bissell
Maryland Port. Cement Co.
Cumberland
Cumberland Elec. Ry. Co.
Electric Development Co.
Edison Electric Illumin'g Co.

Massachusetts

Beverly
Gulf Refining Co.
Boston
Cochrane Chemical Co.
Fall River
Fall River Gas Co.
Pittsfield
Boston & Albany R. R. Co.
Somerville
Gulf Refining Co.
Wier Branch
Williams, Franklin D.
Worcester
American Iron & Steel Co.

Michigan

Detroit
Aluminum Castings Co.
Bagley Estate
Detroit Steel Products Co.
Michigan Steel Boat Co.
Solvay Process Co.
Ecorse
Palmer Motor Car Co.
Flint
Weston-Mott Co.
Highland Park
Ford Motor Car Co.
Morenci
Ohio Dairy Co.
Sault Ste. Marie
Union Carbide Co.
Wells
Stephenson Charcoal Iron Co.
Zug Island
Detroit Iron & Steel Co.

Missouri

St. Louis
American Car & Foundry Co.
Anheuser-Busch Brg. Asso.
Berry-Weihmiller Mach. Co.
Diesel Engine Co., Inc.

New Jersey

Bound Brook
Central R. R. of New Jersey
Camden
Garden State Dairies
Standard Oil Co.
Dover
Ulster Iron Works
Edgewater
General Chemical Co.
Elizabeth
Hitchings & Co.
Garwood
Anchor Post Iron Works
Harrison
Crucible Steel Co.
Otis Elevator Co.
Newark
Barlow Foundry Co.
Carnegie Steel Co.
Ladew Tannery Co.
Mundy, J. S. Co.
Newark Fdry & Metal Co.

Paterson

Destructor Co.

Perth Amboy

Didier-March Co.

Phillipsburg

Warren Fdry. & Machine Co.

Undercliff

General Chemical Co.

New York

Alsen
Alpha Portland Cement Co.

Auburn
International Harvester Co.

Bronx
N. Y. Westchester & Boston
R. H. Co.

Brooklyn
Edison Elec. Illuminating Co.
Knickerbocker Theater
Manhattan Bridge Co.
Merrill Brothers

Buffalo
Frontier Iron Works
Strong Steel Foundry Co.

Elmira
Thatcher Mfg. Co.

Lockport
Simonds Mfg. Co.
Western Block Co.

Corona, L. I.
Tiffany Studios

Hessena
Electric Carbon Co.

Maurice
Newbury Mfg. Co.

New York City
N. Y. Board of Water Supply

Singapore Falls
Hydraulic Power Co.

Olson
Clark Brothers
Vacuum Oil Co.

Packhill
Fleischmann Mfg. Co.

Pea Yan
John T. Andrews Co.

Philadelphia Springs
Sheldrake Springs San-
itarium

Piermont
Piermont Paper Co.

Port Richmond
Port Richmond Theater

Rochester
T. H. Symington Co.

Schenectady
General Electric Co.
Mohawk Gas Co.

Syracuse
Syracuse Crucible Steel Co.
Halsomb Steel Co.
Sulway Process Co.

Walden
Walden Knife Co.

Watertown
New York Air Brake Co.

North Carolina

Charlotte
Southern Power Co.

Durham
Southern Power Co.

Lowell
Spencer Mountain Mills

Raleigh
Carolina Power & Light Co.

Ohio

Akron
Adamson Machine Co.
International Harvester Co.
Star Drilling Machine Co.

Alliance
Tramane Williams Co.

Ashland
Tide Water Pipe Co.

Ashabula
American Fork & Hoe Co.

Barberton
Columbia Chemical Co.
Pittsburgh Valve & Fitt. Co.

Bellairs
Cambria Mining Co.
Rodefer Glass Co.

Bellfontaine
Tide Water Pipe Co.

Canal Dover
Penn Iron & Coal Co.

Canton
Bonnot Co.
Canton Drop Forge Co.
Cleveland Canton Spring Co.
Cleveland Axle Mfg. Co.

Cleveland
Cleveland Worsted Mills
Cleveland Railways
Cleveland Mattress Co.
Corrigan McKinney Co.
Enamel Products Co.
Ferro Fdry. & Machine Co.
Otis Steel Co.
Parish & Bingham Co.

Columbus
Penna. Lines W. of Pittsburgh

Conneaut Harbor
Pitts. & Conneaut Dock Co.

Defiance
Angliaze Power Co.

Lima
Ohio Steel Foundries Co.

Lorain
American Shipbuilding Co.

Ravenna
Tide Water Pipe Co.

Rittman
Ohio Salt Co.

Sandusky
Libbey Glass Co.

Silica
Toledo Owens Glass Sand Co.

Tiffin
Great Western Potteries Co.

Toledo
Owens Bottle Machine Co.
Toledo Glass Co.

Warren

Chicago Cleveland Car Roof-
ing Co.

Youngstown
Carnegie Steel Co.
Pollock Co., Wm. B.
Republic Iron & Steel Co.
United Eng. & Fdry. Co.
Youngstown Sheet & Tube Co.

Pennsylvania

Allegheny
Pennsylvania Railroad Co.

Allentown
American Steel & Wire Co.

Beaver
Beaver County Jail

Beaver Falls
Pittsburgh Seamless Tube Co.

Berwick
American Car & Foundry Co.

Bethlehem
Bethlehem Steel Co.
Didier-March Co.
Lehigh Coke Co.
Sheldon Axle Co.

Bradock
American Steel & Wire Co.

Bradford
Boviard & Seyfang

Bridgetown
American Vanadium Co.

Burnham
Standard Steel Works

Caldale
Lehigh Coal & Naviga. Co.

Constable Hook
Standard Oil Co.

Conway
Penna. Lines W. of Pittsburgh

Coudersport
Tide Water Pipe Co.

Daquesne
Carnegie Steel Co.

Easton
General Chemical Co.
Ingersoll Rand Co.
Lafayette College
Wm. Wharton Jr. Steel Co.
Treadwell Engineering Co.
Easton Hospital

Eddystone
Baldwin Locomotive Works
Belmont Iron Works

Edgewater
General Coal & Coke Co.

Pennsylvania—Con.

Eldred
Tide Water Pipe Co.

Erie
Erie Engine Works
Erie Foundry Co.

Ford City
Pittsburgh Plate Glass Co.

Franklin
Atlantic Refining Co.

Greensburg
Keystone Coal & Coke Co.
Pennsylvania Swing Co.
Greensburg Coal Co.

Homestead
Carnegie Steel Co.

Hudsondale
Tide Water Pipe Co.

Kaumont
Pennsylvania Fireproofing Co.

Lansford
Lehigh Coal & Naviga. Co.

Lebanon
American Steel & Iron Co.

Lewistown
Lewistown & Reedsville Elec. Ry. Co.

Lower Mann
Mann, Jas. H. Co.

Marcus Hook
General Chemical Co.

Marianna
Pittsburgh-Buffalo Co.

Martins Creek
Alpha Portland Cement Co.

Meadville
Meadville Malleable Iron Co.

McKees Rocks
Pressed Steel Car Co.
Pennsylvania Malleable Co.

Midland
Pittsburgh Crucible Steel Co.

Muncie
Tide Water Pipe Co.

Nesquehoning
Lehigh Coal & Naviga. Co.

New Brighton
W. E. Leard

Oakmont
Best Mfg. Co.

Oil City
Citizens Traction Co.
Reid, Jos., Gas Engine Co.

Palmerton East
New Jersey Zinc Co.

Philadelphia
American Pulley Co.
Lewis, Jno. T. & Bro. Co.
Nelson Valve Co.
Phila. Rapid Transit Co.
St. Mary's Hospital
Union Petroleum Co.

Pittsburgh

American Locomotive Works
American Steel Foundries
Atlantic Refining Co.
Damascus Bronze Co.
Garrison, A., Foundry Co.
Hubbard & Co.
United Eng. & Fdry. Co.

Portage

Forge Coal Mining Co.

Pottstown

Warwick Iron & Steel Co.

Reading

Metropolitan Electric Co.
Robesonia Iron Co.

Rochester

H. C. Fry Glass Co.

Seek

Lehigh Coal & Naviga. Co.

Sharon

Nat. Malleable Castings Co.
Sharon Foundry Co.

Shumans

Tide Water Pipe Co.

Sunbury

Susquehanna Silk Mills

Swedeland

Heckscher, Richard & Sons Co.

Swissvale

Union Switch & Signal Co.

Tamaqua

Lehigh Coal & Naviga. Co.

Thurlow

American Steel Foundries

Titusville

Tide Water Pipe Co.

Wampum

Crescent Portland Cem. Co.

Windber

Berwind White Coal Min. Co.

York

General Roofing Mfg. Co.

Rhode Island**Newport**

United States Navy

Pawtucket

Pawtucket Gas Co.

South Carolina**Belton**

Green, Spartanburg & Anderson Ry.

Cothran

Green, Spartanburg & Anderson Ry.

Great Falls

Southern Power Co.

Tennessee

Chattanooga
Chattanooga Gas Co.
Chattanooga St. Ry. Co.

Texas

Port Arthur
Gulf Refining Co.

Virginia

Danville
City of Danville
Laurel
Clinchfield Coal Corp.

Norfolk

Anheuser-Busch Brg. Asso.

Pulaski

General Chemical Co.
Pulaski Mining Co.

Richmond

American Locomotive Co.

Washington, D. C.

Washington Steel & Ord. Co.

West Virginia

Cabin Creek Junction
Virginia Power Co.

Glen Ferris

Electro Metallurgical Co.

Huntington

Chas. Boldt Glass Co.

Manheim

Alpha Portland Cement Co.

Martinsburg

Interwoven Mills, Inc.

Worthington

Four State Coal Co.

Wisconsin**Appleton**

Appleton Coated Paper Co.

Manitowac

Chicago & N. W. R. R. Co.

Canada

Bois Blanc Island, Ont.

Detroit Windsor Ferry Co.

Cape Breton

Nova Scotia Steel & Coal Co.

Cornwall, Ont.

Mond Nickel Co.

Copper Cliff, Ont.

Canadian Copper Co.

Sault Ste. Marie, Ont.

Algoma Central & Hudson River R. R.

Shawinigan Falls, Que.

Aluminum Co. of America
Northern Aluminum Co.

Welland, Ont.

Union Carbide Co.

CYRUS C. MILLER
PRESIDENT BOROUGH OF THE BRONX

CITY OF NEW YORK
BUREAU OF BUILDINGS
BOROUGH OF THE BRONX
THIRD AVENUE AND 177TH STREET
OFFICE OF THE SUPERINTENDENT

JAMES A. HENDERSON
SUPERINTENDENT

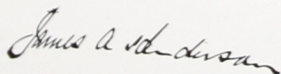
May 29th, 1913.

American Cement Tile Mfg. Co.,
29 Broadway, N. Y. City.

Dear Sirs:-

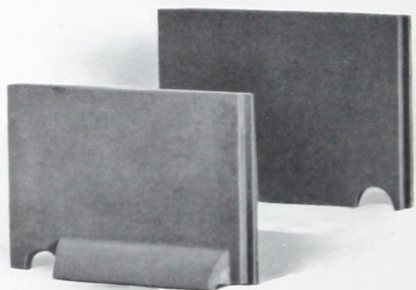
At a regular meeting of the Superintendents of Buildings of New York City held at Borough Hall, Brooklyn, on May 20, 1913, present- Superintendents Carlin of Brooklyn, Moore of Queens, Seaton of Richmond and Henderson of The Bronx, the cement roof tile manufactured by the American Cement Tile Mfg. Co., and tested by Prof. Moore at The Polytechnic Institute, Brooklyn, March 19th to April 2nd, 1913, was approved for general use as a fireproof roofing material as required by Section 94 of the Building Code, in the Boroughs of Brooklyn, Queens, Richmond and The Bronx in the City of New York.

Respectfully,



Superintendent of Buildings,
Borough of The Bronx.

F.



Standard Flashing Tile





